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The Supporting Effective Teaching Project: 2. The Measures

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This article presents the development and the technical and conceptual characteristics of two of the three measures used in the SET project, to discuss how they relate to each other, and to present evidence of their concurrent validity. The Pathognomonic-Interventionist (P-I) Interview yields rich descriptions of teachers' experiences with one or more students with special education needs included in their classes. The scoring system infers teachers' beliefs about disabilities, and the teachers' self-described instructional practices in working in inclusive elementary classrooms. The Classroom Observation Scale (COS) is a detailed observation by two third-party observers of teacher–student interactions during instruction in core subjects in the regular classroom when students with SEN are present. Based on criteria for effective instruction, the COS yields a quantitative score of teaching practices in four categories, as well as Predominant Teaching Style, a measure of the quality of instructional interactions with individual students during the lesson. In this article the relationships between the P-I and COS measures are explored, asking, for example, whether the COS validates teachers' self-reports about their inclusive practice, and whether the P-I scale reflects differences observed in teachers' practices. A research agenda to extend this inquiry is proposed.

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The Supporting Effective Teaching Project: 2. The Measures

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This article presents the development and the technical and conceptual characteristics of two of the three measures used in the SET project, to discuss how they relate to each other, and to present evidence of their concurrent validity. The Pathognomonic-Interventionist (P-I) Interview yields rich descriptions of teachers' experiences with one or more students with special education needs included in their classes. The scoring system infers teachers' beliefs about disabilities, and the teachers' self-described instructional practices in working in inclusive elementary classrooms. The Classroom Observation Scale (COS) is a detailed observation by two third-party observers of teacher–student interactions during instruction in core subjects in the regular classroom when students with SEN are present. Based on criteria for effective instruction, the COS yields a quantitative score of teaching practices in four categories, as well as Predominant Teaching Style, a measure of the quality of instructional interactions with individual students during the lesson. In this article the relationships between the P-I and COS measures are explored, asking, for example, whether the COS validates teachers' self-reports about their inclusive practice, and whether the P-I scale reflects differences observed in teachers' practices. A research agenda to extend this inquiry is proposed.

Teacher beliefs represent a "messy construct" (Pajares, 1992) in that they are difficult to investigate, elusive to interpret, and subject to measurement errors such as response biases. Kagan (1992) described teacher beliefs as a "piebald of personal knowledge" that "lies at the very heart of teaching" (p. 85). The Supporting Effective Teaching (SET)

project was developed in response to the finding that teachers seemed to differ in their assumptions and beliefs about the nature of disability and, as a result, in how they viewed their roles and responsibilities in working with students with disabilities in their inclusive classes. The development of the project and the model of causal factors and outcomes is described in this issue (Jordan, 2018), and is not reviewed here. One issue, however, that will be addressed is how teachers' beliefs relate to teachers' observed practices. This article examines whether there is a relationship between teachers' self-reported beliefs as derived from an interview-based measure, and their practices as observed by third parties, and, if so, whether this is indicative of concurrent validity of the indices of beliefs and practices. The findings are situated in the context of other studies that attempt to gauge teachers' beliefs about inclusion in relation to their practices in inclusive settings.

Kiely, Brownell, Lauterbach, and Benedict (2014) noted that there is a discrepancy between what teachers say and what they actually do in practice. This may in part be the result of transparency in many of the self-report scales of attitudes and beliefs reported in the literature. To more accurately assess belief and practice, the SET project developed two measures that address this shortcoming: the Pathognomonic-Interventionist (P-I) Interview and the Classroom Observation Scale (COS).

The P-I Interview has the advantage of low transparency. It avoids some of these challenges of paper-and-pencil self-ratings by asking teachers to recount their experiences with one or more of their included students in the manner of a narrative story. Third-party raters infer P-I scores from teachers' responses to interview probes that elicited teachers' understandings of cause and effect in learners' successes or failures. The interview also yields a self-report of what actions teachers took to respond to their students. The P-I scale may therefore prove to be a more valid instrument with lower transparency than questionnaires for coding teacher beliefs about their roles and responsibilities with their included students.

The COS is a detailed observation by two third-party observers of teacher–student interactions during instruction in core subjects in the regular classroom when students with special education needs (SEN[1]) are present. The observation system results in a rating of the frequency and quality of instruction received by individual students with and without SEN in an inclusive classroom.

The measures are sufficiently generic that they have been adapted for other countries, and are appearing in others' publications (for example, in this issue see Lanterman & Applequist, 2018; Specht & Metsala, 2018). This article therefore responds in part to ongoing requests to describe the contents and technical characteristics of the measures that have not been previously published as a unit. A third measure, the Beliefs About Learning and Teaching Questionnaire, is presented in a separate article in this issue (Glenn, 2018).

[1] In the absence of consensus on how to designate students with learning difficulties and/or disabilities, students at risk of failure, and those who struggle to learn for a variety of reasons, the British term *students with special education needs* (SEN) is used here. This recognizes, however, that *special education need* is a relative term that may be represented differently by policies and procedures in various jurisdictions, and that it is not meant to imply a deviation from a supposed class "norm."

1. The P-I Interview

The P-I Interview was developed by Stanovich (1994; also Stanovich & Jordan, 1998a, 1998b) as a powerful tool to gauge teachers' beliefs about their roles and responsibilities in meeting the learning and emotional needs of students with a variety of differences. Over the course of the project it was refined to provide both a qualitatively rich description and a quantitative scale of teacher beliefs. The scores, completed by two independent raters, represent teachers' described actions with students with SEN, at risk, or typically achieving, in categories spanning topics such as: information gathering; programming (accommodations, monitoring, and review); and collaborating with resource teachers, teaching assistants, and parents (see Appendix 1 & Appendix 2). In addition, raters conclude their analysis with two holistic ratings; the teachers' beliefs about the locus of Responsibility for meeting the needs of students with SEN, and teachers' Attribution of the cause of the students' learning needs. Responsibility and Attribution ratings provide a gauge of the underlying epistemological beliefs that teachers hold about disability along a continuum from deficit- or medically based, to a social phenomenon that results from communicational, emotional, and physical barriers caused by the environment.

A paper-and-pencil, and therefore less labour-intensive measure of beliefs, the Beliefs About Learning and Teaching Questionnaire, was subsequently developed by Glenn (2007; see also Jordan, Glenn, & McGhie-Richmond, 2010), and is the subject of her report in this volume (Glenn, 2018).

The P-I Interview is a one-on-one confidential interview, during which teachers are requested to trace the progress of two students with whom they had worked (Appendix 1). Teachers are asked to select one student who was formally identified as exceptional, and one other. This might be a student who in the teacher's opinion is at risk of failing to make progress in school, or a typically achieving student. When asked to focus on specific students who have difficulty learning, teachers are able to explain in chronological sequence the steps they have taken over a school year, in the manner of a narrative story (Engel, 1993). Teachers describe their recalled experiences, reporting their perceptions of the students' characteristics, the decisions they made, their intentions and their reasons for doing so, and their judgements about the results, in relation to their understanding of their roles and responsibilities in meeting the needs of their students with disabilities. In the manner of an informant approach (Powney & Watts, 1987), the interviewer probes teachers' explanations and rationales for their beliefs and actions that provide the data for later coding: "Why?", "Why did you do that?", "What did you decide?", "Why was that important?", "What did you think might happen?", "What did you think/hope would happen?", and "If you'd had a choice, what would you have chosen to do?" The probes are intended to elicit teachers' rationalizations and attributions, their judgements and reasons for the decisions they made.

Polkinghorne (1988) described the role of explanatory narrative as a research tool:

> Its aim is to construct a narrative account explaining "why" a situation or event involving human action has happened. The narrative account ties together and orders events so as to make apparent the way they "caused" the happenings under investigation. (p. 161)

Engel (1993) described the narrative interview as the collection of "origin myths," in which the narrator constructs concepts of self in relation to the society and culture in which he or she lives and acts (p. 789). The interview therefore represents the teacher's reconstruction of the events of the previous year, adapted to their rationale for how they practice and the decisions they made.

By the end of the interview, five topics have been covered in the sequence they arose in the dialogue:

1. Entry Phase: Initial information gathering concerns about, and assessments of the student when first assigned to the teacher (collecting data and observations, gathering information from previous teachers, school records and parents, conducting informal assessment).
2. Programming: Instructional program (the teacher's description of modified curriculum, accommodations in instructional and evaluation techniques, how far the teacher followed recommended Individualized Education Plan provisions, or used co-operative learning and Universal Design techniques). Monitoring and reviewing student progress (whether or how the teacher applied summative and formative evaluation techniques and calibrated them for the student).
3. Collaboration with staff (whether and for what purpose the teacher collaborated with colleagues and resource staff about the student, worked with the in-school team).
4. Collaboration with the educational assistant, if applicable (whether programs were coordinated with those offered by resource personnel).
5. Collaboration with parents (how often and for what purpose the teacher communicated with or reported to the student's parents; whether or how the parents contributed to the student's school work).

The confidential interviews are conducted individually with teachers in a private room in the school, taking between 40 and 70 minutes. The interviews are audio-recorded and later transcribed for coding. The scoring system, described below, is then applied to respondent statements in the transcripts to yield a numerical score of between 1 and 3 for each of 14 criteria. Transcripts of the teachers' narratives are analyzed to identify the statements that represent their attributions of the students' characteristics, the decisions the teachers made and their justifications for making them, their intentions and their reasons for doing so, and their judgments about the results. A score of 1 point represents a pathognomonic belief and a score of 3 points represents an interventionist belief. Statements that are composites of both criteria, or that vacillate between the two, are given a midpoint belief score of 2. The pairs of contrasting criteria that are used for the P-I scoring procedure are presented in Appendix 2.

Each interview transcript is rated independently by two third-party raters on a 3-point scale (Appendix 2), in order to yield an inter-rater reliability score. During initial training of raters, pilot interviews were used so that differences in interpretation could be discussed, and criteria for coding agreed upon. Only when raters had a high level of consistency on pilot interviews were the main interviews coded.

Part way through the project, raters were trained to provide two holistic ratings on a 5-point scale of the teacher's beliefs about their roles and about the cause of a student's difference: the Responsibility and Attribution scores, described below.

The P-I Interview has been reported in several studies, with good internal construct validity and reliability among scorers (Jordan & Stanovich, 2003, 2004). The inter-rater reliability for scoring the P-I Interview ranged from +.88 (Jordan, Lindsay, & Stanovich, 1997) to +.91 (McGee, 2004). Stanovich and Jordan (1998) reported a Cronbach's alpha of +.89, and the mean Pearson correlation between interview topics of +.53. A principal components analysis of the scores on the 20 criteria yielded a first component that accounted for 36.9% of the variance.

In recounting the narrative of their experiences, teachers demonstrated the underlying premises about their task, about the nature of the students' learning challenges and successes, and about the support, resources and "school norm" or overall staff and colleagues' views about, and priority given in that school to including students with diverse learning needs.

The opposite ends of this beliefs dimension are characterized as follows:

Pathognomonic (P-I scores at or close to 1). Disability is a structural, organic or neurological condition that is a static, internal characteristic of the student; it is unlikely to be amenable to change. It is the result of a pathological state that can be named (pathos+gnomen) and reliably identified by traditional standardized assessment instruments. The student's characteristics limit the effectiveness of instruction, and are best addressed by specialized educational intervention techniques (remedial education, second language instruction, behavioural counselling, social work, etc.). Regular (general) education teachers who express such beliefs do not see themselves as having primary responsibility for the student's instruction, since education specialists with training are assumed to take responsibility for that role.

The pathognomonic perspective (P-beliefs) reflects a traditional set of beliefs that have been variously termed medically, deficit- or pathology-based, clinical (Kalyanpur & Harry, 1999), or norm-referenced (Gartner & Lipsky, 1987; Graden, Casey, & Christenson, 1985). Examples of statements reflecting this perspective are:

"He sees the Special Ed resource for language; I don't need to do that with him."

"There's not much I can do because of his family's attitude."

"She's just not interested." " He just doesn't get it."

Interventionist (P-I scores at or close to 3). Disability is in part created by barriers in an environment that limits the student's opportunity to learn. These may include barriers in how the teacher regularly communicates instruction and/or how the student communicates learning. Since learning difficulties are understood to be communicational, dynamic, and amenable to change, the teachers understand that it is their responsibility, in collaboration with parents and other professionals, to find ways to circumvent (accommodate) or reduce the communication barriers when the child is included in the school community. Barriers due to emotional and social factors are also the responsibility

of teachers to the extent that they can promote and encourage learning in a welcoming inclusive environment.

Interventionist beliefs (I-beliefs), are characterized by the understanding that learning difficulties are amenable to instructional accommodations for which the teacher is responsible. These views of disability are termed the "social" perspective (Oliver, 1990; Rioux, 1997; Slee, 1997), the "socio-cultural perspective" (Kalyanpur & Harry, 1999), and "building community" (Göransson & Nilholm, 2014). Kalyanpur and Harry (1999) referred to traditions outside of western medical culture in which the community takes responsibility for accepting and supporting children with a variety of unique and differing characteristics. Examples of statements reflecting this perspective are:

> "I try to check in with the Resource Teacher at least once a week to see what they are doing so I can follow up in my class."
>
> "She's had lots of experience of failing, so I want her to be successful here, so she will see herself as a reader."

Responsibility and Attribution subscales of the P-I Interview. After completing the coding of the transcript, each coder considered the interview as a whole and assigned two holistic scores:

Responsibility. A rating of a teacher's overall involvement and responsibility in providing instruction to students expressed during the interview, on a scale of 1 (pathognomonic) to 5 (interventionist)

Attribution. A holistic rating of the underlying causes to which the teacher most often attributes the student's learning difficulties during the interview, on a scale of 1 (pathognomonic) to 5 (interventionist).

2. Classroom Observation Scale: A Third-Party, In-Class Observation of Teaching Practices

The SET project's primary tool for estimating teaching style and practices is the Classroom Observation Scale (COS; see Stanovich [1994], Jordan & McGhie-Richmond, [2014], and Appendix 3). This observation takes place during two to three hours, and preferably a half-day of core lessons (language arts, math, science, social studies) in the regular elementary classroom when students with SEN are present.

Prior to the lesson to be rated, on a list of students in the class, the teacher identifies who is designated by the school system as exceptional, who is at risk, and who is absent. Unknown to the teacher, the raters select two students from the list, at least one of whom is exceptional. A second student is selected to represent either one at risk or one not identified (typically achieving). These students are identified by name tags or desk tags for tracking in the classroom.

During the lesson, the two raters are present on the periphery of the classroom, each one independently rating the instructional style of the teacher on the 31 items in the scale, and making notes on the teacher's interactions with the designated students being tracked. Post observation, inter-rater reliability is determined.

The scale is made up of four parts:

Total COS score. Trained observers rate teachers on 31 items based on Englert, Tarrant, and Mariage's (1992) self-rating checklist of effective teaching practices in inclusive classrooms (Appendix 3). The items cover time management, classroom management, and lesson presentation. While items in the sections on time and classroom management are derived from process-product research, there are items in the latter sections that address constructivist teaching, and scaffolding instruction. The checklist of 31 items provides an operational measure of effective teaching skills as confirmed by previous research on instructional factors that enhance student learning (Englert et al., 1992).

Predominant Teaching Style-a (whole class). Following the ratings in class, the raters complete the scoring of teaching interactions with the students in the class, using the notes about the interactions with the tracked student received during seat work. The raters use a 7-point scale to score the extent of teacher–student interaction during the seat work part of a lesson:

1. The teacher did not interact with this student.
2. The teacher checked work briefly and moved on.
3. The teacher consistently checked and moved on. (This teaching style must be exhibited more than once and with more than one student.)
4. The teacher transmitted: The teacher questioned the student and/or told the student what to do (teacher to student interaction only).
5. The teacher transmitted consistently. (This must be exhibited more than once and with more than one student).
6. The teacher elicited student responses and elaborated (interacted with) student responses (observed at least once). The teacher questioned a student and waited for a response, or a student asked a question to which the teacher responded, each followed by a reply from the other (student–teacher–student or teacher–student–teacher). Longer instructional interactions were also scored at this level. Social interactions unrelated to the lesson material were not included.
7. The teacher elicited responses and elaborated consistently. (This must be exhibited more than once and with more than one student).

Predominant Teaching Style-b (with an included student with SEN). This measure is the same as Predominant Teaching Style-a, but limited to the teachers' interaction with one student who has been formally designated as exceptional. The teacher is not told who is being monitored. This scale is intended to be a measure of the extent to which a student receives instruction calibrated to his or her needs; a measure thought to reflect the inclusivity of the teacher's practices.

Predominant Teaching Style-c (with a student at risk). This scale uses the same 7-point scale as Predominant Teaching Style-a and -b, but the subject observed is a student designated by the teacher as being at risk of failing to make academic progress. Again, the teacher is not aware which student is being monitored. This measure indicates the extent to which students at risk are receiving instruction calibrated to their needs,

hence the extent to which the teacher attends to the needs of those students who have not been designated as exceptional and whose slide into difficulties might be prevented.

Results

Validity of the P-I Scale

Glenn (2007) reported that, for her sample of 33 teachers, the P-I scores on the 14 3-point scale ratings ranged from 1.40 to 3.00, with a group mean P-I score of 2.46 (*SD* = .50). This is consistent with other samples using the P-I measure (McGee, 2001, 2004). In our early work, about 25% of general education classroom teachers in our studies overall held pathognomonic beliefs with scores below 2, while 20% held interventionist beliefs with scores at or above 2.5. Approximately 55% of the teachers held beliefs that had characteristics of both ends of the spectrum and that tended to vacillate between them. These mid-range beliefs are at times indicative of teachers' struggles to resolve the paradox between their beliefs and the policies and procedures and views of colleagues that represented beliefs at one or the other extreme of the P–I continuum.

Responsibility scores (n = 33) had a mean of 4.2 (*SD* = 1.5) and Attribution scores (n = 33) had a mean of 2.82 (*SD* = .87), both on a 5-point rating scale. As reported by Glenn (2007), the Responsibility scale scores correlated with the P-I scores (n = 36, r = .66, p < .01), and with the Attribution scores (n = 36, r = .48, p < .01).

Validity and Reliability of the COS

McGhie-Richmond, Underwood, & Jordan (1997) reported that the inter-rater reliability between the two observers for 63 teacher observations was 94%. COS total scores on the 31-item, 3-point rating range from 23 to 64, with a mean total COS score of 49.33 (*SD* = 10.63). This is consistent with other studies using the COS (McGee, 2001, 2004). The Student Engagement score ranged from 2 to 10, with a high mean of 8 (*SD* = 2.29).

A discriminant functions analysis of the scores of 63 regular classroom elementary school teachers on the 31 items of the COS (McGhie-Richmond et al., 2007) tested the hypothesis that the highest scoring teachers showed more constructivism compared to direct instructional methods. The hypothesis was rejected. Five items discriminated the total scores of highest scoring from mid- and lowest scoring teachers. These items collectively addressed how teachers engaged all their students in the lesson. Whether they led the students to construct understanding or used direct and strategy instruction techniques did not discriminate more from less effective (high scoring) teachers. However, telling students what to expect, gaining student attention, monitoring lesson transitions, and maintaining high student response rates in teacher-led activities did discriminate those with the highest COS scores. These five items became the Student Engagement score.

Table 1 contains the results of the correlations between the scores and sub-scores of the COS.

Table 1

Correlations Between COS Totals and Subscales of Student Engagement, Predominant Teaching Style, and Teacher Interactions with Exceptional and At-Risk Students (Glenn, 2007)
(N = 36)

Factor	COS 31-Item Total	Student Engagement	Predominant Teaching Style	Predominant Teaching Style-b (EX)
Student Engagement	.824**	1.000		
Predominant Teaching Style-a	.766**	.606**	1.000	
Predominant Teaching Style-b (EX)	.372*	.322	.441**	1.000
Predominant Teaching Style-c (AR)	.101	.005	.209	.516**

Notes: *$p < .05$. **$p < .01$. AR = at risk; EX = exceptional; TA = typically achieving

As expected from the discriminant function analysis of the COS items that yielded the Student Engagement score, the total COS scores correlated with the Student Engagement score ($r(36) = +.83$, $p < .001$).

An interesting result is that Student Engagement correlated with overall Predominant Teaching Style-a. That is, the higher the teachers' score on the Student Engagement items that include getting and holding students' attention to the lesson in hand, the higher were teachers rated for initiating cognitively extending interactions with students ($r(36) = .61$, $p < .001$). It was the case also that teachers who scored high on Predominant Teaching Style-b with students with SEN also had higher overall COS scores. This suggests that there are predominant teaching style patterns among teachers, some of which are more amenable than others to including students with a range of learning needs.

Concurrent Validity of the P-I Scale of Teacher Beliefs and the COS Scale of Teaching Practices

Table 2 presents the correlations between the sub-scores of the P-I Interview and those of the components of the COS. While the P-I total score itself did not have a significant correlation with any of the COS measures, the Responsibility and Attribution ratings did. Teachers who claimed to hold the primary responsibility for their students' learning also had higher scores on overall COS and on the Student Engagement and Predominant Teaching Style measures, all at $p < .05$. Similarly, those teachers who tended to attribute student learning difficulties to situational and environmental factors also scored higher on Student Engagement and had a more interactive style of teaching as identified by the Predominant Teaching Style-a and -b measures. These were again

significant at $p < .05$, suggesting a moderate relationship that is worthy of further and more in-depth study.

Table 2

Correlations of P-I Score, Responsibility, and Attribution with COS Total, Student Engagement, Predominant Teaching Style-a, and Teacher Interactions with Exceptional and At-Risk Students (Glenn, 2007) (N = 36)

Factor	P-I Score	Responsibility	Attribution
COS Total	.077	.440*	.304
Student Engagement	.185	.431*	.397*
Predominant Teaching Style-a	.280	.428*	.361*
Predominant Teaching Style-b (EX)	.178	.318	.378*
Predominant Teaching Style-c (AR)	.054	.045	.205

Notes: *$p < .05$. AR = at risk; EX = exceptional.

Discussion

The P-I Interview proved to be an excellent tool for eliciting teacher beliefs without encouraging respondents to provide answers that they deemed would be acceptable to the interviewer. This technique of "biographical interviewing" (Engel, 1993) resulted in an opaque measure of beliefs, since it asked respondents to recount their experiences with specific students in the form of a narrative story, rather than to rate alternative answers. By probing with "why" questions about the teacher's decisions and actions, the P-I Interview elicited "because" responses, providing insight into the framework of beliefs on which each teacher based their retelling.

The main drawback of the P-I Interview is the length and cost of collecting, transcribing, and analyzing the 1- to 2-hour interview, one participant at a time. Modern technology has reduced this somewhat by providing voice-to-text technology that allows researchers to collect and transcribe interview data in one step. While the interview format yields rich case material, the need to work individually with each participant still makes it poorly suited to collecting data from multiple respondents in large-scale research. SET researchers have attempted to design questions that tap teachers' beliefs about disability in a more cost-effective paper-and-pencil survey, the Beliefs About Learning and Teaching Questionnaire. It requires administration and factor analysis over a larger number of participants (see Glenn, 2018; Lanterman & Applequist, 2018).

There have been several new surveys and questionnaires that assess teacher beliefs about inclusion (e.g., Cook, Cameron, & Tankersley, 2007; Ernst & Rogers, 2009; Forlin,

Earle, Loreman, & Sharma, 2011). They yield a variety of factors about attitudes, sentiments, and concerns about inclusion and working with students with SEN. A beneficial contribution to the field would be an instrument that reliably tapped teachers' beliefs about inclusion and related factors, and that had low transparency to discourage response biases.

The COS reported here is also not complete. Since its development there have been a number of good classroom observation tools that attempt to identify effective inclusive classroom practices (e.g., Lancaster, 2014; Loreman, Forlin, & Sharma, 2014; Loreman, Forlin, Chambers, Sharma, & Deppeler, 2014). While the measure needs to be adapted to contain more direct measures of inclusive practices such as Universal Design for Learning and differentiated instruction, there is considerable value in looking at the one-to-one and one-to-small group instruction from the perspective of the individual included student. The ratings of Student Engagement and Predominant Teaching Style with individual students could be viewed as a measure of the "student's eye view" of instruction received from the teacher and are promising for further investigation.

Rose (2010) claimed that there is no evident single set of teaching characteristics that define effective inclusive practice. Rose cited Davis and Florian (2004) to indicate that while teachers who were flexible in their approaches and who were prepared to use a broad range of teaching strategies were more likely to be successful in inclusive classrooms, it was not possible to identify a specific pedagogical trait that could be described as uniformly beneficial. Rose further asserted that "attention to planning, good communication with students, high expectations, demonstrating respect for all learners are all characteristics that appear common to effective teachers" (p. 130–131).

In our study, a proxy for the effective teaching strategies, and particularly the good communication listed by Rose, might be the Student Engagement variable based on five observed teaching practices that specifically engage individual students, and the Predominant Teaching Style, a holistic rating of the extent to which a teacher questions individuals and small groups to promote higher order thinking. While Rose may be correct that there are multiple practices common to effective teachers, this research shows that there may be attitudinal and belief constructs that underlie these practices. Table 2 shows the strong positive correlation between Student Engagement and Predominant Teaching Style and the Responsibility and Attributions ratings. In effect, raters concurred that the teachers who assumed instructional responsibility for their students and who attributed learning difficulties to situational and environmental factors also demonstrated more frequent and more in-depth instructional interactions with all their students. The result was that from the students' perspective, the amount of available instruction was dramatically increased.

One finding of concern was the lack of teacher measures that were related to the instructional opportunity available to students deemed by their teachers to be at risk of failure. The Predominant Teaching Style-c experienced by students who were at risk did not correlate with the indicators of good teaching, i.e., neither with COS scores nor with Student Engagement (Table 2). On a positive note, teachers with overall high scores on Predominant Teaching Style-a, who tended to engage students in cognitively extending, one-on-one and small group learning also did so with students whom they deemed to be

at risk (Predominant Teaching Style-c). On the whole however, the students who were at risk tended to receive the least amount of attention of any group of students. Again this may be indicative of differences in overall teaching style, some of which seem to benefit subgroups of learners, while others more generally benefit all learners. Or the anomaly of the at-risk group may be an artifact of the research, in which participating teachers believed the interest of SET researchers in their classrooms was focused on seeing only their teaching with students with SEN.

Further research is needed to investigate whether the "inclusiveness" of a classroom is in part a function of teachers' predominant teaching styles, how they dispense their instructional time, and to whom. The fact that these measures widely differentiated how teachers used their instructional time, with both students with and without disabilities and those at risk, and that the practices are guided by underlying assumptions and beliefs about ability and learning suggests that more needs be done to discover the patterns of instruction that benefit a variety of learners. To do so could lead to an increase in instructional effectiveness for the benefit of all learners.

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Appendix 1

SET Project Pathognomonic-Interventionist Teacher Interview

Teacher _____ Interviewer _____
School _____
Date of interview _____

Introduction:
Today I'd like to talk about a couple of your students. We will trace your experiences with them from the point at which you first learned that they would be in your class to the present time. I will ask you about what happened over the past year with these students, your opinions about what happened, and the reasons you have for making the decisions and taking the actions that you did. There aren't any right or wrong answers—we are just interested in your experiences and your perspectives about these students.
First I would like you to select a couple of students from your class list for us to talk about. They should be ones for whom we have received a parent consent form. Would you pick one who might be recognized as having special needs, who is working from an IEP, and perhaps has had a number of special education provisions put in place? The second student is one about whom you have some concerns —not necessarily having been formally recognized as exceptional, but who is having difficulties and who you think may not reach his or her potential.

1. Let's talk about each student in turn.
What is [student A]'s background? Tell me a bit about him or her. How is he/she currently doing?

2. Tell me what happened when [student A] first came to your attention.

What happened?
- What records did you check?
- What steps did you take to learn about him/her?
- Did you actively seek to familiarize your self with him/her?
- Assessment—did you request/conduct any?
- How did you establish what entry point in the curriculum he/she was at?

What else did you do?

Who was involved?
- With whom did you confer?—parents, resource, previous teacher?—how many times?
  - When?

Why did you do that?
- What did you hope to find out?
- Was that what you expected?
- What did you decide to do?

2a. Did you do anything special for this student in your program?
- What did you try?—*why did you do that*?
- How did you deal with curriculum expectations?
- Did you do instructional accommodations?—what did you hope he/she would achieve?
- What do you think are the kinds of accommodations that [student A] needs?
- Did you accommodate for other areas?—how, how often?
  - Social needs? Self concept?

2b. How do you keep track of [student A]'s progress?
- Do you do anything to keep track of his/her <u>individual</u> progress?
  - *Why do you do that*?—For what purpose? How often?
- Do you monitor progress on the IEP?—Who else is involved?—

3a. Do you work with any other teachers on staff?—resource (SERTs) principal? (not EAs—they are next)
- How does that happen?—fit with program?
- Why do you do that?—can you explain how it works?

How useful did you find this for [Student A]?
—for you—as a source of advice? Support?
Who keeps track of the IEP part of Student A's progress?
Who else do you work with?

3b. Do you work with an EA for [student A]?

How does that happen?—fit with program?
Why do you do that?—can you explain how it works?
How useful is this for your work with student A?
What else do you do?

4. How do you work with [student A]'s parents (guardians, family)?

When did you meet the initially?—for what purpose?
Did you or the parent initiate the meeting?
How often do you meet them now?—for what purposes?
Who initiates these meetings?
What do you see as the parents' responsibility in working with you? Why do you think that is so?

Now let's turn to [student B].

(Follow protocol from 1 to 4—if same information, confirm similar patterns—So you do pretty much the same things for [student B] as you've described for [student A]?

How are they different?

Do you do anything individually for [student B] that you don't for [student A]?—accommodations? Expectations? Keeping track of progress? Working with other staff to implement—monitor IEP, keep track of progress?
Working with parents?)

Many thanks for taking the time to discuss these students. I hope you found the experience positive—we don't often get time to reflect on what we do.
Is there anything else you'd like to tell me about how inclusion/ delivering services to students with IEPs works here?

Interviewer tips:

1. BEFORE the Interview—Get to know the delivery model and school norm in the school. Get to know the terminology used for—resource teachers, special education classes/placements, the withdrawal room, student labels if used (e.g., MID= mild intellectual disability)
2. ALWAYS check the tape recorder, and mike are on and past the leader. Record the interviewee name, date, school and time, and your name, and rewind to check that recorder is functioning.
3. LABEL the tape as well as the tape box, with date, names, school, before you leave the school.
4. DURING the interview, establish eye contact, smile, be open (not arms folded). Relax and smile. Aim for open-ended questions, lots of "why" "what made you think that…" "What were you hoping might happen?" "What did you have in mind when you did that?"
   Be supportive—statements of support include empathy—e.g., "That must have been hard." "You really gave it a good shot," etc.

Appendix 2

SET Project Pathognomonic-Interventionist Interview Scoring Form

Name of Child, School, Date of interview, Interviewer, etc.
Coder ID. Date of coding, etc.
Codeable units are one of three types of statements:

1. Attributes to self or others characteristics such as attitude, ability, motivation, as causes to explain behaviours, achievement, learning difficulties, etc.
2. Judgment statements about a student's characteristics
3. Rationalization statements about teacher's actions including reasons and explanations for the actions ("because" statements or equivalent).

Overall Rating of Primary Attribution

1. Teacher attributes cause of student's difficulties to characteristics internal to the student (ability, motivation, IQ, disability, designation/label)
2.
3. Teacher attributes student's difficulties to parental, cultural, second language, and other exogenous factors.
4.
5. Teacher attributes student's difficulties to previous and/or current school and instructional factors and lack of opportunity to learn

Overall Rating of Responsibility

1. Teacher uses child's exceptionality designation to justify own non-involvement and exemption from responsibility.
2.
3. Teacher accommodates student but limits it to activities associated with child's designation, not to needed functional objectives (e.g., accommodates time to learn, "lowers expectations")
4.
5. Teacher describes efforts to understand child's disability/difficulties and how they influence other aspects of learning. Justification/explanations of interventions seen as being own responsibility in order to meet broad set of individual student needs.

I. ENTRY PHASE

1. Information about individual student:

Teacher's priority for finding out about new student with a disability:

1. Teacher does not familiarize him/herself with the characteristics of the incoming student upon entry to the class
2. Teacher reads/examines information routinely delivered to him/her (e.g. IEP, summary of information from previous grade)
3. Teacher actively investigates characteristics of incoming student (e.g., Ontario Student Record, IEP, previous teachers, parents, resource teacher)

2. Formal assessment

1. Teacher understands purpose of formal assessment (psycho-educational, normative) to be to *confirm* student's disability category
2. Teacher vacillates between understanding assessment as confirmatory of deficit and as instructionally useful
3. Teacher expects formal assessments to uncover information that is useful for instructional planning and adaptation (e.g., learning characteristics and preferences, entry-level skills)

3. Grade level vs. functional level

1. Teacher does not identify individual student's entry point for learning but uses curriculum expectations set for the grade level.
2. Teacher relies on information in the OSR, or IEP information, or regularly scheduled board-wide tests to identify student's entry point for learning (grade-level identifiers).
3. Teacher relies on own and resource teacher's informal assessments and individual observations with formal assessment and IEP data to identify student's entry point for learning

Subscore for Section I =

II. PROGRAMMING

1. Goals and objectives

1. Teacher does not use individual goals and objectives in planning and implementing classroom instruction for the student.
2. Teacher occasionally but not systematically refers to individualized goals and objectives in relation to classroom instruction for this student.
3. Teacher is systematic in incorporating individualized goals and objectives in planning for and implementing classroom instruction for this student.

2. Social needs

1. Teacher is not aware of the social/friendship needs of the student and does not do anything to assist the student to integrate socially in the class.
2. Teacher is aware of the student's social needs but does not act to integrate the student socially in the class.
3. Teacher believes that the social needs of the student are important and acts to integrate the student socially (e.g., arranging buddies, co-operative group roles, modelling acceptance and caring, including student in class routines and activities).

3. Accommodations

1. Teacher understands instructional accommodations to mean "lowering expectations" (reducing quantity of work, lowering performance standards). In the case of modified objectives, teacher expects others will implement them (E.A., parents, resource or special education teacher).
2. Teacher makes accommodations for the student which lower expectations but provides opportunities to work beyond the expectations.
3. Teacher understands accommodations to mean maintaining curriculum expectations, and builds a variety of opportunities to learn through instructional and responding alternatives, supplemental technology, etc.

4. Monitoring progress

1. Teacher judges student performance in relation to grade-level criteria set for total class, or grade level criteria set for modified program.
2. Teacher judges student performance by compromising between grade-level expectations and student's efforts to meet them.
3. Teacher judges student performance in terms of individualized achievement criteria designed in tandem with the student's IEP.

5. Formal vs. regular reporting

1. Teacher believes that student's progress need only be reviewed at formal reporting times (e.g., when required to report to parents, report cards, etc.).
2. Teacher believes in ongoing monitoring of student progress, but does not do so systematically (too little time, too many to track, anecdotal records not kept up).
3. Teacher believes that student progress needs to be regularly monitored and has a variety of ways of doing so (anecdotal records, check sheets, individual notes and communications with others).

Subscore for Section II =

III. COLLABORATION WITH STAFF

1. Individual vs. collaboration with resource teacher, colleagues

1. Teacher sees resource/special education (if student part-time in class) teacher as primarily responsible for working directly with student. Teacher does not integrate own program with others'.
2. Teacher values collaboration with resource/special education teacher as useful and informative but does not integrate own program and expectations for this student with others'.
3. Teacher values collaboration, uses it to share common expectations, use resources to increase opportunity for student to achieve in class.

2. Tracking progress

1. Teacher assumes resource teacher and/or others are keeping track of student's progress in their respective pieces of the student's program.
2. Teacher assumes resource teacher and/or others are keeping track of student's progress in their respective pieces of the student's program, and that checking in with each other is needed occasionally.
3. Teacher values frequent conferencing and planning with resource and other teachers and expects that resource teacher will support student learning objectives in the classroom (e.g., pre-teaching vocabulary, concepts, scribing, helping with accommodations).

Subscore for Section III =

IV. COLLABORATION WITH ASSISTANTS (EAs, volunteers, student teachers)

1. Planning and implementation

1. Teacher views EA as primarily responsible for planning and implementing accommodations and learning objectives.
2. Teacher views guiding the EA as important in designing and implementing instruction, but then leaves EA to implement.
3. Teacher views self as primarily responsible for instruction, engaging in ongoing planning and implementation with EA.

2. Monitoring

1. Teacher views EA as primarily responsible for monitoring student's progress, assumes that he/she will keep track and update program as needed. Checks in at formal reporting times.
2. Teacher views guiding the EA as important but expects EA to monitor progress and work independently, checking in as needed.
3. Teacher expects to meet EA regularly, receive progress report and guide further development of intervention based on student progress.

Subscore for Section IV =

V. COLLABORATION WITH PARENTS

1. Parental roles

1. Teacher does not appear to respect parent's knowledge and role in supporting the child's learning (e.g., sees parents as part of the problem, interfering or neglectful, having nothing to contribute).
2. Teacher values the parents' role but seldom or inconsistently draws upon it.
3. Teacher respects parent's role as a co-partner in supporting child's learning. Teacher believes that parents are part of the team and contacts them frequently.

2. Parental responsibility

1. Teacher does not see self as responsible for involving parents beyond required reporting duties (report card times, getting signature on IEP).
2. Teacher sees self as responsible for informing parents through notes home, in student agenda, e-mails, etc., when student's performance is notable.
3. Teacher believes he/she has the responsibility to involve parents in meaningful ways that relate to the student's progress (invitations to participate in decision making, frequent meetings in school and by phone).

Subscore for Section V =

TOTAL SCORE:

APPENDIX 3

The Classroom Observation Scale (COS)

Observer:_____ Date: _____ Time:_____ to _____

Teacher:_____ School: _____

NIE = not in evidence Inc = inconsistent Con = consistent NA = not applicable

A. Classroom Management

1. Physical Space NIE Inc Con NA
2. Rules NIE Inc Con NA
3. Respect NIE Inc Con NA
4. Cites Rules NIE Inc Con NA
5. Positioning NIE Inc Con NA
6. Scans NIE Inc Con NA
7. Nonverbal S. NIE Inc Con NA
8. Praise NIE Inc Con NA

B. Time Management

1. Inst. Time NIE Inc Con NA
2. States Expt. NIE Inc Con NA
3. Est. Clr. Rtn. NIE Inc Con NA
4. Lssn. Attn. NIE Inc Con NA
5. Mntrs. Trans. NIE Inc Con NA
6. Stwrk. Attn. NIE Inc Con NA
7. Crc. Stwrk. NIE Inc Con NA
8. Actv. Stwrk. NIE Inc Con NA

C. Lesson Presentation

1. Review NIE Inc Con NA
   a) Actions NIE Inc Con NA
   b) Objectives NIE Inc Con NA
   c) Prior know. NIE Inc Con NA
2. Overview
3. Models
   a) Framework NIE Inc Con NA
   b) Examples NIE Inc Con NA
   c) Clues NIE Inc Con NA
   d) Models NIE Inc Con NA
4. Brisk Pace NIE Inc Con NA
5. Questioning NIE Inc Con NA
6. WHWW Q's NIE Inc Con NA
7. Resp. Rate NIE Inc Con NA
8. . Error Drill NIE Inc Con NA
9. . Sum. Cont. NIE Inc Con NA
10.. Sum. Acct. NIE Inc Con NA
11. Forecasts NIE Inc Con NA

D. Predominant Teaching Style

style-a) with whole class

style-b) with student 1

style-c) with student 2

A. Classroom Management

1. Arranges physical space to maintain minimally disruptive traffic patterns and procedures.
2. Rules and procedures exist for non-instructional events (e.g., movement about room, student talk, distributing materials, bathroom use) and for instructional events (e.g., getting ready for lessons, expected behaviour of instructional group, obtaining help, seat work procedures, out-of-seat procedures)
3. Evidence of rules that involve respect for other members of class and/or provides verbal reminders to students about how to treat each other.
4. Consequates rule noncompliance quickly; cites rule or procedure in responding to disruptive behaviours.
5. Positions self in room to provide high degree of visibility (e.g., can make eye contact with all students).
6. Scans class frequently.
7. Uses nonverbal signals whenever possible to direct students in a non-disruptive manner when teaching other groups of students.
8. Administers praise contingently and uses specific praise statements.

B. Time Management

1. Allocates generous amounts of time for instruction (limits time spent on behaviour management, recess, and non-academic activities, keeps transition time between lessons short).
2. States expectations for seat work and transitions in advance (e.g., prepares students for transitions in advance by stating behavioural expectations and informing students that lesson is drawing to a close).
3. Establishes clear lesson routines that signal a beginning and end.
4. Gains students' attention at the beginning of the lesson and maintains attention during instruction at 90% level.
5. Monitors transition by scanning and circulating among students.
6. Maintains students' attention during seat work at 86% or higher.
7. Circulates frequently among seat work students to assist students and to monitor progress.
8. Provides active forms of seat work practice clearly related to academic goals.

C. Lesson Presentation

1. Provides review of previous day's concepts at beginning of lesson; actively tests students' understanding and retention of previous day's lesson content.
2. Provides a clear overview of the lesson:
    a. Explains task in terms of teachers' and students' actions. Tells students what they will be accountable for doing.
    b. States the purpose and objective of the lesson. Introduces topic(s) of learning.
    c. Activates prior experiences and knowledge relevant to the topics, strategies, or skills to be learned.
3. Actively model and demonstrate concepts, learning strategies, and procedures related to effective problem solving in the content area:
    a. Provides organizational framework that will help students organize the lesson information (e.g., text structure genre, diagram of lesson topics and subtopics, concept maps, semantic web).
    b. Points out distinctive features of new concepts and uses examples and non-examples to show relevant and irrelevant features of the concept.
    c. Points out organization, relationships, and clues in learning materials that elicit learning strategies.
    d. Models task-specific learning strategies and self-talk that will help students achieve (e.g., rehearsal strategies, retrieval strategies).
4. Maintains a brisk pace during the lesson.
5. Provides frequent questions to evaluate students' mastery of lesson concepts.

6. Evaluates students' understanding of seat work tasks and cognitive processes by asking students "what, how, when, where, why" questions related to the targeted skill or strategy.
7. Maintains high accurate responding rate (70–90%) in teacher-led activities:
   a. Repeats practice opportunities until students are not making errors.
   b. Delivers instructional cues and prompts.
   c. Provides error correction procedures.
   d. Using prompting or modelling following errors rather than telling the answer.
8. Provides error drill on missed concepts or review of difficult concepts during and the at the end of each lesson.
9. Gives summary of the lesson content and integrates lesson content with content of other lessons or experiences.
10. Summarizes the lesson accomplishments of individuals and group.
11. Forecasts upcoming lesson content.

D. Teacher's Predominant Teaching Style

Circle the predominant style of interaction between the teacher and all students during seat work and/or lesson presentation (academic interactions involving lesson material, not managerial interactions).

Inc = inconsistent, once only; Con = consistent, more than once

1	2 Inc 3 Con	4 Inc 5 Con	6 Inc 7 Con
— No interactions with students on lesson content.	CHECKING Teacher circulates, checking work briefly and moving on (brief and cursory).	TRANSMITTING Teacher circulates, transmitting and directing lesson responses (tells students what to work on, how to correct it, and moves on).	ELABORATES Teacher elaborates (asks students questions about lesson material concepts that require responses; interaction requiring student participation).

2. Teacher interaction with two individual students.
   Select one student rated as exceptional and one rated as at risk or typically achieving. Use the 7-point scale described above)
   a. Predominant style of interaction with Student 1 (exceptional):
   b. Predominant style of interaction with Student 2 (at risk or typically achieving):